

## Software Release Notice

**System:** MGS

**Release:** McMurdo 3.0

**Date:** 29 Dec 00 3:30PM

### **Modification Description:**

McMurdo Station Upgrade

The following changes are planned for McMurdo Ground Station software. These modifications have been completed since the McMurdo2.3 release.

1. Does not force the ACU to a WB or NB mode prior to a test. Leaves the ACU in whatever mode is currently set, prior to beginning Boresight Tests or Servo Tests.
2. Single Socket (Lien List Item #9)
3. Hot handover Uplink (Lien List Item #2) - Start button on top level highlights when uplink is configured to off. Hitting start button starts a non-coherent uplink.
4. Correct Train Axis Positioning (Lien List Item #15) - Changes system default setting of train axis from 30 degrees to 70 degrees.
5. Geo-Sync Satellite Tracking (Lien List Item #20)
6. Improves the resolution of frequency for uplink.
7. Configures Bit Sync names from the sysdfilt.ascii file.
8. Improve calculation of pedestal rates for program tracking at high rates.

### **Files Affected:**

The files that were developed and/or utilized as part of McMurdo 3.0 are listed in Attachment 1: McMurdo 3.0 FILES.

### **Hardware Requirements:**

N/A

### **Validation Procedures:**

McMurdo3.0 will be validated through continued daily testing at NASA/McMurdo/10m for scheduled satellite passes. In addition, the following actions can be performed to validate some upgrades included in this release:

#### **Forced ACU Mode Prior to Test**

Set the ACU mode to WB. Run a lock-on-test. Notice that the ACU stays in WB throughout the test. Try changing the mode to NB and running the same test. Notice that the ACU stays in NB throughout the test. Repeat for other boresight and servo tests.

### **Single Socket – ATS Master**

Test the following with ATS Master Release 3.3 or later.  
The following will demonstrate a remote schedule operation:

1. Generate a remote schedule file.
2. Demonstrate that the remote schedule can be loaded to the station controller then activated by the ATS Master.
3. Validate the remote schedule action by observing the schedule at the operator console.

### **Remote Ephemeris**

The following will demonstrate the remote ephemeris operation:

1. Generate a remote ephemeris file
2. Download ephemeris from the ATS Master to the station controller.
3. Validate the remote ephemeris information by observing the data at the operator console.

### **Provides better frequency resolution for uplink**

Run an uplink using the EO-1 Configured Frequency for the hp8780 of 2090.659999. Notice that when the uplink is complete, that the hp8780 is tuned to the same frequency. Try the same test with different configuration files, some coherent, some non-coherent and with several different uplink frequencies. For each test, run a pass or simulated pass, let the computer perform the sweep function for each pass or simulated pass, then verify the displayed and output frequencies match the entered (configuration) values.

### **Changes the sysdfit.ascii file**

On the X-Band Channel Screens for both Control/Status and Configuration, notice that the bit sync selections are unchanged from prior releases and match the Bit Syncs currently installed in the Bit Sync Chassis. Check both X-Band Screens. Run a Bit Error Test on a channel which has RadarSat selected. Notice that the Test Modulator settings match RadarSat and that the bit rate is set correctly to 105Mbps.

### **Hot Handover**

Configure a pass without uplink. Notice that the START SWEEP button is highlighted on the top-level screen. Hit the START SWEEP button and notice that a non-coherent uplink is initiated.

### **Train Axis Positioning**

Notice that on passes for which the highest elevation position is less than 70 degrees that the train axis positions in such a way that the pedestal is tilted toward the spacecraft at the point of highest elevation – this will tend to cause the pedestal elevation angle to be higher than the earth elevation angle at that point.

Notice that on passes for which the highest elevation position is greater than 70 degrees that the train axis positions in such a way that the pedestal is tilted away from the spacecraft at the point of highest elevation. This will tend to cause the pedestal elevation angle to be lower than the earth elevation angle at that point.

## **Geo-Synchronous Tracking**

Enter ephemeris for a geo-synchronous satellite and notice that the system can schedule a track for that satellite. Schedule a track and see that the track performs as expected.

## **Improved Program Tracking**

Compare Track Analyses with Fit Plot for Satellites before and after this change and notice smaller deltas after the change. Notice if this improves the performance for high elevation passes for Wire and Trace.

## **Known Bugs or Limitations:**

Some open DRs may not be resolved in this release due to equipment constraints. ViaSat requests a 4-hour window to install new software, verify fixes and debug problems.

## **Installation Procedure:**

CSOC staff will install the new release remotely. It will be necessary to coordinate the time of the update with the operator and with ViaSat for phone support.

Please perform the following installation and activation and/or restore instructions on both McMurdo computers.

Prior to installation, please retrieve the sysdfit.ascii file from the home/aaas/etc directory and ftp it to the ViaSat server for modification. ViaSat will edit the sysdfit.ascii file for the following changes:

- Train positioning
- Geo-synchronous Satellite scheduling information
- Bit Sync Information

ViaSat will place the sysdfit.ascii file back on the ViaSat server for installation into the releases/rel3.0/etc/ directory.

To install this release, first check to see that there is adequate disk space available by typing bdf. There should be at least 150MB available. If not, back-up to tape and then delete old unused releases in the /home/aaas/releases directory. Create a rel3.0 directory in the /home/aaas/releases directory. Copy the file nasa3.0.tar.Z in to this directory. Uncompress and untar nasa3.0. This will create a bin directory with the new executables.

Copy (cp) the directory rel2.3/etc to a new rel3.0/etc directory. Using the copy (cp) command will automatically created the new directory and populate it with the contents of the old directory. Modify the bin and etc links under /aaas/ to look at the new release directories.

Copy the executables winPrint and pcltrans (if they exist) from rel2.3/bin to rel3.0/bin. Run a diff between NasaStart in rel2.3/bin and rel3.0/bin. If there are differences, then use the older version of NasaStart from rel2.3/bin.

Rename the rel2.3/etc tapelog files, ephtxt.txt and the config directory. Then create links of those files and directory to rel3.0/etc/. By creating those links then the configuration files are kept up to date no matter what release of software is activated.

Create a restoration script called sw2.3 which will remove the links under /aaas/ for bin and etc and restore them to rel2.3/bin and rel2.3/etc. Create an activation script called sw3.0 which will remove the links under /aaas/ for bin and etc and link them to rel3.0/bin and rel3.0/etc.

Install the new sysdfilt.ascii in rel3.0/etc.

**Activation Procedure:**

SCC 3.0 activation procedure (must be installed with ATS 3.3 or later):

(1) Select option "Exit" from the "Session" menu. This action will close the SCC graphical user interface (GUI) and stop all SCC processes. Processes are stopped after "Stopping rci" and "Removing Stale Message Queues" messages are displayed. Hit "enter" to display the SCC command prompt, "mgs >".

(2) Type "sw3.0" to switch to SCC release 3.0. Type "Start" to start the SCC processes. The SCC GUI main window will show "NASA Version 3.0".

**Restore Procedure:**

SCC 2.3 restore procedure (must be installed with a Master Release prior to ATS 3.3):

(1) Select option "Exit" from the "Session" menu. This action will close the SCC graphical user interface (GUI) and stop all SCC processes. Processes are stopped after "Stopping rci", and "Removing Stale Message Queues" messages are displayed. Hit "enter" to display the SCC command prompt, "mgs >".

(2) Type "sw2.3" to switch back to SCC release 2.3. Type "Start" to start the SCC processes. The SCC GUI main window will show "NASA Version 2.3".

**Documentation Affected:**

N/A

**Comments:**

Norm Cushing will support this software installation from ViaSat and his number is (678) 924-2545.

**Approval:**

The software modifications described in this release notice has been validated and accepted.

---

NASA MGS Project Manager

---

Date

**SOFTWARE RELEASED:**

The software modifications described in this release notice have been completed and released to ground station operations.

---

System Manager

---

Date

---

NASA Program Monitor

---

Date

**Attachment 1**  
**McMurdo 3.0 Files**

**The bin Directory:**

.StartAll  
.StartUIF  
AntennaControlStartup  
CopyETC  
Displays  
Nasa  
NasaStart  
RestoreETC  
Start  
StartRemote  
Stop  
StopRemote  
authent  
chkgw  
configud  
control  
dpsHndlr  
errhandler  
eup  
executive  
getNtpSyncInfo  
ioh  
pedcont  
postPassShell  
que\_chk  
rci\_client  
rci\_rmt  
rci\_server  
recon  
recsch  
resetLANGateway  
resetLANGateway2  
resetLANGateway3  
resetLANGateway4  
resetLANGateway5  
resetLANGateway6  
resetLANGateway7  
resetLANGateway8  
resetLANGateway9  
rmqs  
schedmon  
snyHndlr  
start.awk  
start\_ntp  
status\_1  
stop.awk  
stop\_ntp  
sup  
tapelog  
terminal  
testexec  
time\_code\_handler

track  
uactask  
winPrint

**The etc Directory:**

sysdlft.ascii

**The etc/hpib directory:**

N/A

**The etc/config directory:**

N/A.